

REMARKS

Further and favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

Claim Amendments

Claim 9 has been amended to incorporate one of the limitations of claim 10, and to limit "x" in the formula " $\text{Fe}_x\text{Pt}_{100-x}$ " to $19 < x \leq 45$. Support for this limitation is found in Figures 1 and 2, and Example 1 of Applicants' specification.

Editorial changes have been made to claims 9, 12 and 14 in order to better comply with U.S. practice.

No new matter has been added to the application by these amendments.

Patentability Arguments

The patentability of the present invention over the disclosures of the references relied upon by the Examiner in rejecting the claims will be apparent upon consideration of the following remarks.

Rejections Under 35 U.S.C. § 103(a)

Baglin et al.

Claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Baglin et al. (U.S. 6,331,364). This rejection is rendered moot for the reasons set forth below.

The Position of the Examiner

The Examiner takes the position that Baglin et al. disclose an $\text{Fe}_{55}\text{Pt}_{45}$ structure which goes from an ordered to a disordered state, and resulting manipulation of coercivity. The Examiner states that it would have been obvious to optimize the range as this would be a result effective variable that would be optimized by one of ordinary skill in the art by routine experimentation to achieve ordering/disordering state.

Applicants' Arguments

As discussed above, independent claim 9 has been amended to recite "An FePt magnetic thin film having an atomic composition represented by the Formula $\text{Fe}_x\text{Pt}_{100-x}$, wherein $19 < x \leq 45$, and having an $L1_0$ structure."

The rejection of claim 9 based on Baglin et al. has been rendered moot by this amendment. Specifically, claim 9 has been amended to incorporate a limitation of claim 10, which was not included in this rejection. Accordingly, it is respectfully requested that this rejection be withdrawn.

Suzuki et al. in view of Baglin et al.

Claims 9-14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Suzuki et al. (U.S. 2002/0041980) in view of Baglin et al. This rejection is respectfully traversed for the reasons set forth below.

The Position of the Examiner

The Examiner states that Suzuki et al. disclose magnetic thin films of FePt having a composition ratio of 1. The Examiner admits that Suzuki et al. fail to disclose a specific composition range of $\text{Fe}_x\text{Pt}_{100-x}$, wherein $19 < x \leq 52$. The Examiner takes the position that it would have been obvious to optimize the Fe/Pt ratio, as Baglin et al. disclose a $\text{Fe}_{55}\text{Pt}_{45}$ structure that goes from an ordered to a disordered state, and resulting manipulation of coercivity. The Examiner again takes the position that this is a result effective variable which would be optimized by one of ordinary skill in the art.

Applicants' Arguments

As discussed in detail in Applicants' Example 1, superlattice-reflected lines, i.e., (001) and (003) diffraction peaks, of FePt were observed for the FePt thin films of $x < 45$, thus indicating that ordered FePt alloys having the $L1_0$ structure were obtained. (Please see page 9, lines 4-6 of Applicants' specification.) These (001) and (003) peaks were not observed when x is 52, 62 and 68, as is demonstrated in Figure 1.

Additionally, in the $\text{Fe}_{50}\text{Pt}_{50}$ thin film, there was no superlattice-reflected line observed, thus indicating that a substrate temperature of 300°C is still too low for the ordering of the FePt thin film. (Please see page 9, lines 8-11 of Applicants' specification.) Applicants discovered that although it is understood that ordering proceeds in this thin film, and it is possible to obtain the L_{10} ordered structures, it is necessary to shift the composition of the FePt thin film to the Pt-rich side, i.e., when $x \leq 49$.

The Examiner has relied upon the teachings of MPEP 2144.05, which states that result effective variables may be optimized. However, as discussed in MPEP 2144.05(II), "...differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical." (Emphasis added.)

Applicants note that the primary reference (Suzuki et al.) fails to teach any range for "x", and the secondary reference (Baglin et al.) teaches a range which is outside the scope of Applicants' claims ($x = 55$). Further, Applicants have demonstrated that the recited range of $19 < x \leq 45$ is critical, and have accordingly rebutted the Examiner's position.

Accordingly, the invention of claims 9-14 is clearly patentable over the cited combination of references. It is respectfully requested that the above-rejection be withdrawn.

Conclusion

Therefore, in view of the foregoing amendments and remarks, it is submitted that each of the grounds of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

Takeshi SEKI et al.

/Amy E. Schmid/

By: 2009.03.30 17:37:27 -04'00'

Amy E. Schmid
Registration No. 55,965
Attorney for Applicants

AES/emj
Washington, D.C. 20005-1503
Telephone (202) 721-8200
Facsimile (202) 721-8250
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